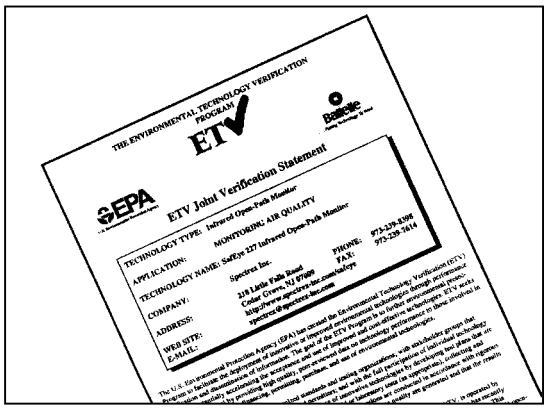
The Monitor

The Newsletter of the ETV Advanced Monitoring Systems (AMS) Center

Volume 4, Number 6 June 2001



Spectrex SafEyes

Two More Technologies Finish Verification Testing

Two optical open-path monitors—Spectrex's models SafEye 227 and SafEye 420—became the latest technologies verified by the Advanced Monitoring Systems Center (AMS). The AMS Center is managed by Battelle in partnership with the U.S. Environmental Protection Agency's Environmental Technology Verification (EPA/ETV) program. Spectrex, Inc., is based in Cedar Grove, NJ.

Open-path monitors are used to provide information about pollutants present in the air from a variety of industrial settings, e.g., plants producing aluminum and steel, sewage and waste treatment plants, pulp and paper production facilities, and fossil fuel combustion. These monitors can continuously monitor air quality, are able to detect several different pollutants, and can provide early warnings of potential noncompliance conditions or emergency release situations. The common method—taking grab samples—is both time-consuming and non-continuous.

The SafEye 227 and SafEye 420 monitors rely on a light source, infrared and ultraviolet, respectively, and a detector to identify and quantify the levels of certain chemicals in the atmosphere (see photo above, right).

The following performance factors were evaluated in the verification test: minimum detection limit, concentration linearity and source strength linearity, accuracy, precision, and sensitivity. A range of known concentrations of various target gases was supplied to each monitor. The SafEye 227 was tested with methane, propane, and a mixture of hydrocarbons. The SafEye 420 was tested with benzene, carbon disulfide, and ammonia. Measurements were made with different path lengths (the distance the light travels from the source to the detector), integration times, source intensities, and numbers of replicated measurements to assess the verification parameters listed above.

The verification statements (see copy, above, left) and verification test reports for these two optical open-path monitors are available on the ETV web site at http://www.epa.gov/etv.

The following verification tests are currently being conducted by the AMS Center:

Ambient fine particulate monitors. Final reports and verification statements for the 13 monitors tested are expected to be available on the ETV web site by late summer. For further information, contact Ken Cowen, 614-424-5547 or cowenk@battelle.org.

Turbidimeters. The test report for the instrument submitted by ABB of Lombard, IL, is expected to be available by late summer. Contact Ken Cowen (see above).

Multi-parameter water probes. This test is expected to be scheduled this summer. Contact: Jeff Myers, 614-424-7705 or myersjd@battelle.org.

(See Technologies on page 2)

Meet the Stakeholder Committees

Two members of the AMS Center's stakeholder committees are periodically spotlighted in *The Monitor*—one each from the air and water committees.

Ernest Bouffard
Air Stakeholder Committee

Ernest Bouffard is a supervising air pollution control engineer for the Connecticut Department of Environmental Protection where he oversees and facilitates the engineering review of applications and drafting the new source and Title V permits. Mr. Bouffard holds a B.S. and an M.S. from Southern Connecticut State University. He earned a master of public administration from the University of Hartford, and his management certificate is in process.

Mr. Bouffard is involved in training, education, guidance, policy development, support, and direction in the review of permit applications for stationary sources of air pollution that are subject to state and federal regulations. His team identifies sources of pollution that are noncompliant and makes enforcement referrals.

Mr. Bouffard has worked on various policy development committees, including the New England Tracking System for the New England Governors' Conference and the Northeast States for Coordinated Air Use Management Stationary Source Committee. Mr. Bouffard was a member of the committee that formulated a regulation mandated by the Clean Air Act Amendments of 1990, which resulted in the reduction of about a thousand tons of NO_x emissions. He recently reviewed a test protocol for an evaluation of an X-ray CEM for multi-metal emissions on an incinerator stack.

Geoffrey Scott
Water Stakeholder Committee

Geoffrey Scott is the chief of the Marine Ecotoxicology Branch of the National Ocean Services Charleston Center for Coastal Environmental Health & Biomolecular Research. He holds a B.S. in biology from Wofford College and an M.S. and Ph.D. in marine science from the University of South Carolina.

Dr. Scott is conducting research that focuses on the effects of urban and agricultural nonpoint source runoff on estuarine ecosystem health, including assessing both the lethal and sublethal effects of chemical contaminants and methods to discern impacts from ecosystem process changes versus chemical contaminant effects. Another of his areas of research is the development of analytical methods to differentiate human versus animal sources of pollution. Dr. Scott has also been instrumental in compiling a long-term database on grass shrimp, the most abundant macropelagic organism found in salt marsh tidal creeks.

Dr. Scott is an associate professor in marine biomedicine and environmental science at the Medical University of South Carolina, an associate professor in marine biology at the University of Charleston, a tenured associate professor at the School of Public Health at the University of South Carolina, and an adjunct associate professor at the Institute of Human and Environmental Health at Texas Tech University.

Technologies *(from page 1)*

Mercury CEMs. Four instruments submitted by three vendors were tested in January in the first phase of the CEMs. Phase 2 of the verification test is to be conducted at a full-scale facility or facilities. Contact: Tom Kelly, 614-424-3495 or kellyt@battelle.org.

On-board vehicle emission monitors. A four-day verification test of an on-board emission monitor in gasoline-powered vehicles was conducted in May for Clean Air Technologies of Buffalo, NY. The final verification report and verification statement are expected to be issued by September. Contact Tom Kelly (see above).

Portable water quality analyzers. A verification test was completed in February at seven locations for the Nitrate Elimination Co., Inc.'s (NECI) portable field nitrate test kit. A second round of testing will focus on arsenic analyzers. Contact Adam Abbgy, 614-424-5484 or **abbgya@battelle.org**.

Verification tests are being planned for the following six additional technology categories, which have been designated as high priorities for testing by the AMS Center and its stakeholder committees:

Air monitoring technologies

- Instruments to monitor organic speciation of vapors in stacks (e.g., dioxins, benzene, phenol)
- Leak detectors for fugitive emissions from valves and flanges
- Portable electrochemical SO_2 analyzers
- Continuous emission monitors (CEMs) for ammonia "slip" from NO_x catalytic control technologies.

Water monitoring technologies

- Rapid detectors of biological contaminants
- Microbiological methods and sensors to detect chemical contaminants.

Upcoming Events

September 2001
9-14 Environmental Technology Verification Workshop, India

October 2001
4-5 AMS Center's water stakeholder committee, Coeur d'Alene, ID
18-19 AMS Center's air stakeholder committee, Seattle, WA